Proposed Standard Enlargement Ratio for 16Mm to 35Mm Optical Printing

EFFORTS TO reduce costs in color cinematography have led, in the past few years, to an appreciably increased commercial use of 16mm film as original negative for 35mm release prints. Optical enlargement printing is, of course, an essential factor in this process. A standard magnification ratio thus becomes a necessity since the difference in aspect ratios of the two film sizes precludes the simple use of the 35/16 ratio.

The Laboratory Practice Committee, chaired by John Stott, tackled the problem in February 1951; a first draft was submitted by Gordon Chambers in May 1951 and approved by the Committee a few months later. A revised draft was subsequently approved for publication by the Standards Committee and is published on the following page for a 90-day period of trial and criticism.

Please forward any comments, in duplicate, to Henry Kogel, Staff Engineer, at Society headquarters, by April 15, 1952.

Proposed American Standard

Enlargement Ratio for 16Mm to 35Mm Optical Printing

PH22.92

In the enlargement printing of 16mm film to 35mm film, a magnification of 2.21 ± 0.01 shall be employed and the center of the 16mm frame as enlarged shall coincide with the center of the 35mm aperture in the enlarging printer.

This will mean a scanned area on the 16mm frame of 0.272 inch ± 0.002 × 0.373 inch ± 0.002 will be projected through the 35mm projector aperture when the print is used in the theater. This corresponds to a frame of 0.284 inch × 0.380 inch if the 16mm original were projected directly.

The scanned area of the 16mm frame in the printer as enlarged to the 35mm camera aperture is 0.286 inch ± 0.002 × 0.393 inch ± 0.002.

Attention of camera users is invited to the desirability of using a camera finder matte 0.272 inch ± 0.002 × 0.373 inch ± 0.002 when exposing 16mm film to be enlarged to 35mm film.

Note: In enlargement from 16mm positive or reversal original to 35mm negative a black frame line will result on the final 35mm print. In the case of enlargement from 16mm negative directly to 35mm print, white frame lines will result. If the height of the 16mm aperture for enlargement from 16mm negative to 35mm print is made 0.300 inch, the resulting aperture image on the 35mm print will be from 0.660 to 0.666 inch in height. While the frame line will not be entirely black, there would be a black margin on either side of the image which would give an additional safety factor in projection.

NOT APPROVED